

REMARKS

Reconsideration of the above-identified patent application in view of the proposed amendment above and the remarks below is respectfully requested.

Claim 1 has been canceled in this paper. Claims 2, 5, 10-13, 15, 38, 42 and 43 have been amended in this paper. No claims have been added in this paper. Therefore, claims 2-16 and 38-44 are pending. Of these claims, claims 3-4, 7-10, 13-14 and 42-44 have been withdrawn from consideration. Accordingly, claims 2, 5-6, 11-12, 15-16 and 38-41 are under active consideration.

Claim 41 has been allowed.

Claim 15 stands objected to "as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, as previously indicated in the office action mailed on February 18, 2004."

In response to the foregoing objection, claim 15 has been rewritten in independent form. Consequently, the objection to claim 15 has been overcome and should be withdrawn.

Claims 1-2, 5-6, 11-12 and 16 stand rejected under 35 U.S.C. 103(a) "as being unpatentable over Yoshida (U.S. 5,818,559) in further view of Bahadur (Liquid Crystals 1990)."

Without acquiescing in the propriety of the rejection, Applicants have canceled claim 1 and have amended claims 2, 5, 11 and 12 so that all of claims 2, 5-6, 11-12 and 16 depend, directly or indirectly, from allowable claim 15.

Therefore, for at least the above reasons, the rejection has been overcome and should be withdrawn.

Claims 38-40 stand rejected under 35 U.S.C. 103(a) “as being unpatentable over Ziegler (U.S. 4,657,348) in further view of Mikura et al. (U.S. 5,880,800) and Sampica et al. (U.S. 5,867,241).” In support of the rejection, the Patent Office states the following:

Note the following elements in figure 1 of Ziegler: front cover 18, front circular polarizer 19, LCD cell 11, and rear linear polarizer 14. Note the triangular air gap between the front polarizer 19 and the liquid crystal cell 11.

Ziegler does not disclose adhering the various elements with an index-matched pressure sensitive adhesive. Mikura et al. discloses that pressure sensitive adhesives are excellent in heat resistance and moisture resistance, are difficult to cause foaming and peeling even in a high temperature and high humidity atmosphere, and are therefore particularly suitable for use in the formation of a liquid crystal display. See column 1, lines 5-10. It would have been obvious to one of ordinary skill in the art at the invention to adhere the various elements of Ziegler using a pressure sensitive adhesive because of its excellent heat resistance and moisture resistance.

Mikura et al. does not disclose an index matched pressure sensitive adhesive. Sampica et al. discloses that within an LCD, it is critical to the display performance for the index of refraction of the adhesive to closely match that of the optical components. See column 1, lines 25-30. It would have been obvious to one of ordinary skill in the art at the time of invention to select a pressure sensitive adhesive such that the index of refraction of the adhesive matched the index of refraction of the optical components of the LCD because this was critical to the display performance.

Ziegler does not disclose the structure of the liquid crystal cell. However, it was known that the basic structure of a liquid crystal cell comprised two transparent substances, each having a transparent conductive layer formed thereon, sandwiching a layer of liquid crystal such that the two transparent conductive layers oppose each other within the cell. It was known that this structure was the most cost-effective for producing an LCD. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form an LCD having this structure because it was cost-effective.

As to claim 39, Ziegler does not disclose forming the front cover from glass. It was well known that glass was cheaper to manufacture and had a higher level of transparency than plastic. It would have been obvious to one of ordinary skill in the art at the time of invention to form the front cover with glass because glass was cheaper to manufacture and had a higher level of transparency than plastic.

As to claim 40, Ziegler does not disclose forming the front cover from plastic. It was well known that plastic was more flexible and was much less likely to crack or shatter than glass. It would have been obvious to one of ordinary skill in the art at the time of invention to form the exterior plates using plastic because plastic was more flexible and less likely to crack or shatter than glass.

Later in the Office Action, the Patent Office states the following:

With respect to claim 38, examiner disagrees with applicant's assertion that Ziegler does not disclose an air gap formed by the front polarizer assembly and the liquid crystal display. The quarter-wave plate 16 can be reasonably interpreted as being part of the liquid crystal display because it is directly adhered to substrate 12 and is part of the image forming apparatus.

Applicants respectfully traverse the present rejection. Claim 38, which has been amended herein, now recites “[a] liquid crystal display comprising:

(a) a liquid crystal display panel, said liquid crystal display panel comprising a first transparent substrate, a second transparent substrate, liquid crystal material positioned between said first and second transparent substrates, a first transparent electrode positioned between said liquid crystal material and said first transparent substrate, and a second transparent electrode positioned between said liquid crystal material and said second transparent substrate;

(b) a rear polarizer assembly positioned behind said liquid crystal display panel, said rear polarizer assembly comprising a rear polarizer and a first index-matched pressure sensitive

adhesive, said rear polarizer having a front side and a rear side, said first index-matched pressure sensitive adhesive being positioned on said front side of said rear polarizer;

(c) a front polarizer assembly positioned in front of said liquid crystal display panel and separated from said liquid crystal display by an air gap, said air gap being defined by said front polarizer assembly and said first transparent substrate of said liquid crystal display, said front polarizer assembly comprising a front polarizer and a second index-matched pressure sensitive adhesive, said front polarizer being crossed relative to said rear polarizer and having a front side and a rear side, said second index-matched pressure sensitive adhesive being positioned on said front side of said front polarizer; and

(d) a transparent cover, said transparent cover being positioned in front of said front polarizer assembly and in contact with said second index-matched pressure sensitive adhesive.”

Claim 38 is not rendered obvious by the applied combination of references for at least the reason that the applied combination of references does not teach or suggest a liquid crystal display comprising, among other things, a front polarizer assembly positioned in front of a liquid crystal display panel and separated from said liquid crystal display by an air gap, wherein said air gap is defined by said front polarizer assembly and the first transparent substrate of said liquid crystal display. Instead, as noted by the Patent Office, Ziegler discloses a “quarter-wave plate 16...directly adhered to substrate 12.” Consequently, because quarter-wave plate 16 is positioned between substrate 12 and the air gap, the Ziegler air gap is not defined by polarizer 19 and substrate 12, but rather, is defined by polarizer 19 and quarter-wave plate 16. Neither Mikura et al. nor Sampica et al. cure this deficiency in Ziegler.

Accordingly, for at least the above reasons, the present rejection should be withdrawn.

In conclusion, it is respectfully submitted that the present application is in condition for allowance. Prompt and favorable action is earnestly solicited.

If there are any fees due in connection with the filing of this paper that are not accounted for, the Examiner is authorized to charge the fees to our Deposit Account No. 11-1755. If a fee is required for an extension of time under 37 C.F.R. 1.136 that is not accounted for already, such an extension of time is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on February 16, 2005

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